

REMARKS

Claims 1-25 are pending in the present application. Consideration of the remarks set forth herein is respectfully requested.

As an initial matter, the Examiner objected to claims 9, 17 and 22 because of an alleged informality with respect to the claim language of “at least one of a drive current and an operating frequency” in the claims. The Examiner suggested substituting the word “or” for the word “and” in each of the claims. Applicants respectfully submit that the claim language, as written, is appropriate. Use of the phrase “at least one of a and b” fully apprises those skilled in the art that the parameter can be either the drive current, the operating frequency or both. If the Examiner insists upon the inclusion of the word “or,” Applicants will be happy to comply, but it is believed that, as written, the claims are appropriate and should be allowed without further amendment. It is believed that the existing language, as well as the language suggested by the Examiner, would have the same legal scope.

In the Office Action, claims 1-2 and 5-9 were rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Mundt (WO 01/23871 A1). Claims 3-4 and 10-25 were rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Mundt in view of Ziger (U.S. Patent No. 5,607,800). Applicants respectfully traverse the Examiner’s rejections.

As the Examiner well knows, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the

reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991); M.P.E.P. § 2142. Moreover, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (CCPA 1974). If an independent claim is nonobvious under 35 U.S.C. § 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988); M.P.E.P. § 2143.03.

With respect to alleged obviousness, there must be something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination. *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561 (Fed. Cir. 1986). In fact, the absence of a suggestion to combine is dispositive in an obviousness determination. *Gambro Lundia AB v. Baxter Healthcare Corp.*, 110 F.3d 1573 (Fed. Cir. 1997). The mere fact that the prior art can be combined or modified does not make the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990); M.P.E.P. § 2143.01. The consistent criterion for determining obviousness is whether the prior art would have suggested to one of ordinary skill in the art that the process should be carried out and would have a reasonable likelihood of success, viewed in the light of the prior art. Both the suggestion and the expectation of success must be founded in the prior art, not in the Applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991); *In re O'Farrell*, 853 F.2d 894 (Fed. Cir. 1988); M.P.E.P. § 2142.

Applying the above-referenced legal standards, it is respectfully submitted that all pending claims are in condition for immediate allowance. Mundt discloses a method for characterizing the quality of microelectronic features using a light source. According to Mundt, an area of a first wafer is illuminated with the light source. The light scattered from the first

wafer is measured and the angle of the light source, detector, or both may be altered to thereby produce a scatter signature for the first wafer. Then, according to Mundt, the scatter signature of the first wafer is compared with a known scatter signature of a second wafer of good quality to determine the quality of the first wafer. Abstract. Mundt specifically notes a problem associated with scatterometry, namely that the light is reflected from specially designed periodic diffraction grating-like structures to monitor the characteristics of the features. Page 2, ll. 18-19. Mundt goes on to describe that a scatter signature 52 is first created for a known sample wafer of good quality, and that the quality of the known sample wafer should be independently verified by some independent verification means such as a scanning electron microscope (SEM). Thereafter, the scatter signatures of future wafers may be compared to the scatter signature 52 of the known sample wafer. Page 9, ll. 20-23. Mundt goes on to note that:

It should be borne in mind that the present invention gathers measurements on actual product wafers. Conventional scatterometry uses special test wafers and patterns so as to simplify the interpretation of the measurement in terms of analytical diffraction models. The complexity of the patterns on 'real' integrated circuits renders this approach impractical. In the present invention, classical diffraction effects are intentionally suppressed by integrating over a large area using broadband illumination.

Page 10, ll. 19-24.

As thus understood, it is respectfully submitted that the disclosure of Mundt is far afield from that of the invention defined by the pending claims. As an initial matter, all of the independent method claims require providing a substrate having at least one grating structure formed thereabove when the grating structure is comprised of a plurality of gate stacks. The various methods involve illuminating the grating structure comprised of a plurality of gate stacks, measuring the light reflected off of the grating structures. At this level, the invention as set forth in the pending claims is fundamentally different from that described in Mundt. In fact,

Mundt goes to great lengths to distinguish the process disclosed therein from methodologies involving forming a grating structure. That is, Mundt specifically teaches away from the use of such grating structures. Mundt believes sufficient information can be obtained by merely illuminating the wafer and analyzing light reflected therefrom, without the use of such grating structures. Page 10, ll. 22-26.

Moreover, the pending claims require providing a library comprised of at least one optical characteristic trace when the target trace corresponds to a semiconductor device having at least one desired electrical performance characteristic. Thereafter, the grating structure on a substrate is illuminated to generate an optical characteristic trace for that grating structure and thereafter the generated optical characteristic trace is compared to the target trace. The exact wording of each claim should be consulted by the Examiner, but it is believed that it is a fair general statement regarding the various independent claims. In the Office Action, on page 3 (emphasis added), the Examiner stated that Mundt discloses the use of a “target trace corresponding to a semiconductor device having at least one desired electrical performance characteristic....” Applicants respectfully and strongly disagree with this assertion. The undersigned has reviewed Mundt in detail but has been unable to locate any specific portion of Mundt where this disclosure is set forth. Should the Examiner maintain the rejection based upon Mundt, it would be appreciated if the Examiner could specifically identify, by line and page number, where this methodology is disclosed in Mundt.

It should be understood that Mundt does disclose comparing a trace of a first wafer to a trace of a second wafer, but at no point is the trace of the first wafer based upon at least one desired electrical performance characteristic of a semiconductor device. In fact, in Mundt, it appears that the scatter signature 52 for the known sample wafer of good quality is independently

verified by another means, such as a scanning electron microscope. That is, it appears that the scatter signature 52 is directed to a characteristic of the wafer that may be measured using a scanning electron microscope. An illustrative example might be a line width or the amount of undercut of a line feature. Moreover, a scanning electron microscope would not be used to determine an electrical characteristic of the first wafer. In view of the foregoing, it is abundantly clear that Mundt does not disclose many fundamental aspects of the invention set forth in the pending claims. Accordingly, withdrawal of the rejection of claims 1-2 and 5-9 on the basis of Mundt is respectfully requested.

Similarly, it is believed that the Section 103 rejection of claims 3-4 and 10-25 on the basis of Mundt and Ziger is equally improper. The secondary reference Ziger cannot cure the fundamental deficiencies noted above with respect to the disclosure of Mundt. Accordingly, for at least the reasons set forth above, it is respectfully submitted that the rejection of claims 3-4 and 10-25 under 35 U.S.C. § 103 should be withdrawn.

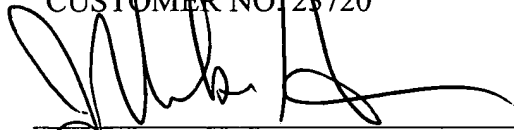
In summary, the prior art of record, even if combined in the manner suggested by the Examiner, does not disclose all limitations of the pending claims. Accordingly, such a prior art rejection is legally improper. Moreover, there is no suggestion in the prior art of record to modify the references so as to arrive at Applicants' claimed invention. A recent Federal Circuit case makes it crystal clear that, in an obviousness situation, the prior art must disclose each and every element of the claimed invention, and that any motivation to combine or modify the prior art must be based upon a suggestion in the prior art. *In re Lee*, 61 U.S.P.Q.2d 143 (Fed. Cir. 2002). Conclusory statements regarding common knowledge and common sense are insufficient to support a finding of obviousness. *Id.* at 1434-35. It is respectfully submitted that any attempt

to assert that the pending claims are obvious in view of Mundt, Ziger or any other art of record necessarily involves an improper use of hindsight using Applicants' disclosure as a roadmap.

For at least the aforementioned reasons, it is respectfully submitted that all pending claims are in condition for immediate allowance. The Examiner is invited to contact the undersigned attorney at (713) 934-4055 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,

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